SEQUENCE LISTING

<110> SIERRA-HONIGMANN, Rocio M.

<120> MODULATION OF ANGIOGENESIS AND WOUND HEALING

<130> 044574-5029

<140> US 09/700,813
<141> 1999-05-20

<150> PCT/US99/11209
<151> 1999-05-20

<150> US 60/086,354
<151> 1998-05-28

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<170> PatentIn version 3.1

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Phe Lys Leu Phe Cys Gly Pro Pro Asn Thr Thr Asp Asp Ser Phe Leu
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Ser Pro Ala Gly Ala Pro Asn Asn Ala Ser Ala Leu Lys Gly Ala Ser
    50                  55                  60
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3

Glu Ala Ile Val Glu Ala Lys Phe Asn Ser Ser Gly Ile Tyr Val Pro
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Glu Leu Ser Lys Thr Val Phe His Cys Cys Phe Gly Asn Glu Gln Gly
                85   90   95

Gln Asn Cys Ser Ala Leu Thr Asp Asn Thr Glu Gly Lys Thr Leu Ala
                100   105   110

Ser Val Val Lys Ala Ser Val Phe Arg Gln Leu Gly Val Asn Trp Asp
            115   120   125

Ile Glu Cys Trp Met Lys Gly Asp Leu Thr Leu Ile Ile Cys His Met
    130   135   140

Glu Pro Leu Pro Lys Asn Pro Phe Lys Asn Tyr Asp Ser Lys Val His
145   150   155   160

Leu Leu Tyr Asp Leu Pro Glu Val Ile Asp Asp Ser Pro Leu Pro Pro
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Leu Lys Asp Ser Phe Gln Thr Val Gln Cys Asn Cys Ser Leu Arg Gly
                180   185   190

Cys Glu Cys His Val Pro Val Pro Arg Ala Lys Leu Asn Tyr Ala Leu
            195   200   205

Leu Met Tyr Leu Glu Ile Thr Ser Ala Gly Val Ser Phe Gln Ser Pro
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Leu Met Ser Leu Gln Pro Met Leu Val Val Lys Pro Asp Pro Pro Leu
225   230   235   240

Gly Leu His Met Glu Val Thr Asp Asp Gly Asn Leu Lys Ile Ser Trp
                245   250   255

Asp Ser Gln Thr Met Ala Pro Phe Pro Leu Gln Tyr Gln Val Lys Tyr
                260   265   270

Leu Glu Asn Ser Thr Ile Val Arg Glu Ala Ala Glu Ile Val Ser Ala
    275   280   285

4

Thr Ser Leu Leu Val Asp Ser Val Leu Pro Gly Ser Ser Tyr Glu Val
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Gln Val Arg Ser Lys Arg Leu Asp Gly Ser Gly Val Trp Ser Asp Trp
305   310   315   320

Ser Ser Pro Gln Val Phe Thr Thr Gln Asp Val Val Tyr Phe Pro Pro
                325   330   335

Lys Ile Leu Thr Ser Val Gly Ser Asn Ala Ser Phe His Cys Ile Tyr
                340   345   350

Lys Asn Glu Asn Gln Ile Ile Ser Ser Lys Gln Ile Val Trp Trp Arg
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Asn Leu Ala Glu Lys Ile Pro Glu Ile Gln Tyr Ser Ile Val Ser Asp
    370   375   380

Arg Val Ser Lys Val Thr Phe Ser Asn Leu Lys Ala Thr Arg Pro Arg
385   390   395   400

Gly Lys Phe Thr Tyr Asp Ala Val Tyr Cys Cys Asn Glu Gln Ala Cys
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His His Arg Tyr Ala Glu Leu Tyr Val Ile Asp Val Asn Ile Asn Ile
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Ser Cys Glu Thr Asp Gly Tyr Leu Thr Lys Met Thr Cys Arg Trp Ser
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Pro Ser Thr Ile Gln Ser Leu Val Gly Ser Thr Val Gln Leu Arg Tyr
    450   455   460

His Arg Arg Ser Leu Tyr Cys Pro Asp Ser Pro Ser Ile His Pro Thr
465   470   475   480

Ser Glu Pro Lys Asn Cys Val Leu Gln Arg Asp Gly Phe Tyr Glu Cys
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Val Phe Gln Pro Ile Phe Leu Leu Ser Gly Tyr Thr Met Trp Ile Arg
                500   505   510

5

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Lys Glu Ile Gln Trp Lys Thr His Glu Val Phe Asp Ala Lys Ser Lys
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Val Arg Cys Arg Arg Leu Asp Gly Leu Gly Tyr Trp Ser Asn Trp Ser
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Ser Pro Ala Tyr Thr Leu Val Met Asp Val Lys Val Pro Met Arg Gly
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Pro Glu Phe Trp Arg Lys Met Asp Gly Asp Val Thr Lys Lys Glu Arg
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Asn Val Thr Leu Leu Trp Lys Pro Leu Thr Lys Asn Asp Ser Leu Cys
        660             665             670


Ser Val Arg Arg Tyr Val Val Lys His Arg Thr Ala His Asn Gly Thr
        675             680             685


Trp Ser Glu Asp Val Gly Asn Arg Thr Asn Leu Thr Phe Leu Trp Thr
    690             695             700


Glu Pro Ala His Thr Val Thr Val Leu Ala Val Asn Ser Leu Gly Ala
705             710             715             720


Ser Leu Val Asn Phe Asn Leu Thr Phe Ser Trp Pro Met Ser Lys Val
                725             730             735


Ser Ala Val Glu Ser Leu Ser Ala Tyr Pro Leu Ser Ser Ser Cys Val
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6

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    Ile Leu Ser Trp Thr Leu Ser Pro Asp Asp Tyr Ser Leu Leu Tyr Leu
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            770                    775                    780

    Arg Ile Pro Ser Asn Val Lys Lys Phe Tyr Ile His Asp Asn Phe Ile
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    Pro Ile Glu Lys Tyr Gln Phe Ser Leu Tyr Pro Val Phe Met Glu Gly
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    Val Gly Lys Pro Lys Ile Ile Asn Gly Phe Thr Lys Asp Ala Ile Asp
                    820  .                 825                    830

    Lys Gln Gln Asn Asp Ala Gly Leu Tyr Val Ile Val Pro Ile Ile Ile
                    835                    840                    845

    Ser Ser Cys Val Leu Leu Leu Gly Thr Leu Leu Ile Ser His Gln Arg
            850                    855                    860

    Met Lys Lys Leu Phe Trp Asp Asp Val Pro Asn Pro Lys Asn Cys Ser
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    Trp Ala Gln Gly Leu Asn Phe Gln Lys Pro Glu Thr Phe Glu His Leu
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    Phe Thr Lys His Ala Glu Ser Val Ile Phe Gly Pro Leu Leu Leu Glu
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    Pro Glu Pro Ile Ser Glu Glu Ile Ser Val Asp Thr Ala Trp Lys Asn
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    Lys Asp Glu Met Val Pro Ala Ala Met Val Ser Leu Leu Leu Thr Thr
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    Pro Asp Pro Glu Ser Ser Ser Ile Cys Ile Ser Asp Gln Cys Asn Ser
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    Ala Asn Phe Ser Gly Ser Gln Ser Thr Gln Val Thr Cys Glu Asp Glu
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7

Cys Gln Arg Gln Pro Ser Val Lys Tyr Ala Thr Leu Val Ser Asn Asp
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Lys Leu Val Glu Thr Asp Glu Glu Gln Gly Phe Ile His Ser Pro Val
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Ser Asn Cys Ile Ser Ser Asn His Ser Pro Leu Arg Gln Ser Phe
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Ser Ser Ser Ser Trp Glu Thr Glu Ala Gln Thr Phe Phe Leu Leu
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Ser Asp Gln Gln Pro Thr Met Ile Ser Pro Gln Leu Ser Phe Ser
        1040   1045   1050

Gly Leu Asp Glu Leu Leu Glu Leu Glu Gly Ser Phe Pro Glu Glu
        1055   1060   1065

Asn His Arg Glu Lys Ser Val Cys Tyr Leu Gly Val Thr Ser Val
        1070   1075   1080

Asn Arg Arg Glu Ser Gly Val Leu Leu Thr Gly Glu Ala Gly Ile
        1085   1090   1095

Leu Cys Thr Phe Pro Ala Gln Cys Leu Phe Ser Asp Ile Arg Ile
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Leu Gln Glu Arg Cys Ser His Phe Val Glu Asn Asn Leu Ser Leu
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Gly Thr Ser Gly Glu Asn Phe Val Pro Tyr Met Pro Gln Phe Gln
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Thr Leu Ile Lys Thr Ile Val Thr Arg Ile Asn Asp Ile Ser His Thr
            35                  40                  45


Gln Ser Val Ser Ala Arg Gln Arg Val Thr Gly Leu Asp Phe Ile Pro
    50                  55                  60


Gly Leu His Pro Ile Leu Ser Leu Ser Lys Met Asp Gln Thr Leu Ala
65                  70                  75                  80


Val Tyr Gln Gln Ile Leu Thr Ser Leu Pro Ser Gln Asn Val Leu Gln
                85                  90                  95


Ile Ala His Asp Leu Glu Asn Leu Arg Asp Leu Leu His Leu Leu Ala
                100                 105                 110
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9

Phe Ser Lys Ser Cys Ser Leu Pro Gln Thr Arg Gly Leu Gln Lys Pro
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Glu Ser Leu Asp Gly Val Leu Glu Ala Ser Leu Tyr Ser Thr Glu Val
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Val Ala Leu Ser Arg Leu Gln Gly Ser Leu Gln Asp Ile Leu Gln Gln
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Leu Asp Leu Ser Pro Glu Cys
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Phe Lys Leu Phe Cys Ala Pro Pro Ser Thr Thr Asp Asp Ser Phe Leu
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Ser Pro Ala Gly Val Pro Asn Asn Thr Ser Ser Leu Lys Gly Ala Ser
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Glu Ala Leu Val Glu Ala Lys Phe Asn Ser Thr Gly Ile Tyr Val Ser
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12

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Gln Asn Cys Ser Ala Leu Thr Gly Asn Thr Glu Gly Lys Thr Leu Ala
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            115                 120                 125


Ile Glu Cys Trp Met Lys Gly Asp Leu Thr Leu Phe Ile Cys His Met
    130                 135                 140


Glu Pro Leu Leu Lys Asn Pro Phe Lys Asn Tyr Asp Ser Lys Val His
145                 150                 155                 160


Leu Leu Tyr Asp Leu Pro Glu Val Ile Asp Asp Leu Pro Leu Pro Pro
            165                 170                 175


Leu Lys Asp Ser Phe Gln Thr Val Gln Cys Asn Cys Ser Val Arg Glu
            180                 185                 190


Cys Glu Cys His Val Pro Val Pro Arg Ala Lys Val Asn Tyr Ala Leu
            195                 200                 205


Leu Met Tyr Leu Glu Ile Thr Ser Ala Gly Val Ser Phe Gln Ser Pro
    210                 215                 220


Leu Met Ser Leu Gln Pro Met Leu Val Val Lys Pro Asp Pro Pro Leu
225                 230                 235                 240


Gly Leu Arg Met Glu Val Thr Asp Asp Gly Asn Leu Lys Ile Ser Trp
            245                 250                 255


Asp Ser Gln Thr Lys Ala Pro Phe Pro Leu Gln Tyr Gln Val Lys Tyr
            260                 265                 270


Leu Glu Asn Ser Thr Ile Val Arg Glu Ala Ala Glu Ile Val Ser Asp
            275                 280                 285


Thr Ser Leu Leu Val Asp Ser Val Leu Pro Gly Ser Ser Tyr Glu Val
290                 295                 300
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```
Gln Val Arg Ser Lys Arg Leu Asp Gly Ser Gly Val Trp Ser Asp Trp
305                 310             315                 320


Ser Leu Pro Gln Leu Phe Thr Thr Gln Asp Val Met Tyr Phe Pro Pro
                325             330                 335


Lys Ile Leu Thr Ser Val Gly Ser Asn Ala Ser Phe Cys Cys Ile Tyr
            340             345                 350


Lys Asn Glu Asn Gln Thr Ile Ser Ser Lys Gln Ile Val Trp Trp Met
            355             360                 365


Asn Leu Ala Glu Lys Ile Pro Glu Thr Gln Tyr Asn Thr Val Ser Asp
    370             375             380


His Ile Ser Lys Val Thr Phe Ser Asn Leu Lys Ala Thr Arg Pro Arg
385             390             395                 400


Gly Lys Phe Thr Tyr Asp Ala Val Tyr Cys Cys Asn Glu Gln Ala Cys
            405             410             415


His His Arg Tyr Ala Glu Leu Tyr Val Ile Asp Val Asn Ile Asn Ile
            420             425             430


Ser Cys Glu Thr Asp Gly Tyr Leu Thr Lys Met Thr Cys Arg Trp Ser
        435             440             445


Pro Ser Thr Ile Gln Ser Leu Val Gly Ser Thr Val Gln Leu Arg Tyr
    450             455             460


His Arg Arg Ser Leu Tyr Cys Pro Asp Asn Pro Ser Ile Arg Pro Thr
465             470             475                 480


Ser Glu Leu Lys Asn Cys Val Leu Gln Thr Asp Gly Phe Tyr Glu Cys
            485             490             495


Val Phe Gln Pro Ile Phe Leu Leu Ser Gly Tyr Thr Met Trp Ile Arg
            500             505             510


Ile Asn His Ser Leu Gly Ser Leu Asp Ser Pro Pro Thr Cys Val Leu
            515             520             525


Pro Asp Ser Val Val Lys Pro Leu Pro Pro Ser Asn Val Lys Ala Glu
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14

Ile Thr Ile Asn Thr Gly Leu Leu Lys Val Ser Trp Glu Lys Pro Val
545   550   555   560

Phe Pro Glu Asn Asn Leu Gln Phe Gln Ile Arg Tyr Gly Leu Asn Gly
                565   570   575

Lys Glu Ile Gln Trp Lys Thr His Glu Val Phe Asp Ala Lys Ser Lys
            580   585   590

Ser Ala Ser Leu Pro Val Ser Asp Leu Cys Ala Val Tyr Val Val Gln
            595   600   605

Val Arg Cys Arg Arg Leu Asp Gly Leu Gly Tyr Trp Ser Asn Trp Ser
    610   615   620

Ser Pro Ala Tyr Thr Leu Val Met Asp Val Lys Val Pro Met Arg Gly
625   630   635   640

Pro Glu Phe Trp Arg Ile Met Asp Gly Asp Ile Thr Lys Lys Glu Arg
            645   650   655

Asn Val Thr Leu Leu Trp Lys Pro Leu Met Lys Asn Asp Ser Leu Cys
            660   665   670

Ser Val Arg Arg Tyr Val Val Lys His Arg Thr Ala His Asn Gly Thr
            675   680   685

Trp Ser Gln Asp Val Gly Asn Gln Thr Asn Leu Thr Phe Leu Trp Ala
    690   695   700

Glu Ser Ala His Thr Val Thr Val Leu Ala Ile Asn Ser Ile Gly Ala
705   710   715   720

Ser Leu Val Asn Phe Asn Leu Thr Phe Ser Trp Pro Met Ser Lys Val
                725   730   735

Asn Ala Val Gln Ser Leu Ser Ala Tyr Pro Leu Ser Ser Ser Cys Val
            740   745   750

Ile Leu Ser Trp Thr Leu Ser Pro Asn Asp Tyr Ser Leu Leu Tyr Leu
            755   760   765

15

Val Ile Glu Trp Lys Asn Leu Asn Asp Asp Asp Gly Met Lys Trp Leu
    770   775   780

Arg Ile Pro Ser Asn Val Asn Lys Tyr Tyr Ile His Asp Asn Phe Ile
785   790   795   800

Pro Ile Glu Lys Tyr Gln Phe Ser Leu Tyr Pro Val Phe Met Glu Gly
            805   810   815

Val Gly Lys Pro Lys Ile Ile Asn Gly Phe Thr Lys Asp Asp Ile Ala
            820   825   830

Lys Gln Gln Asn Asp Ala Gly Leu Tyr Val Ile Val Pro Ile Ile Ile
            835   840   845

Ser Ser Cys Val Leu Leu Leu Gly Thr Leu Leu Ile Ser His Gln Arg
    850   855   860

Met Lys Lys Leu Phe Trp Asp Asp Val Pro Asn Pro Lys Asn Cys Ser
865   870   875   880

Trp Ala Gln Gly Leu Asn Phe Gln Lys Pro Glu Thr Phe Glu His Leu
            885   890   895

Phe Thr Lys His Ala Glu Ser Val Ile Phe Gly Pro Leu Leu Leu Glu
            900   905   910

Pro Glu Pro Val Ser Glu Glu Ile Ser Val Asp Thr Ala Trp Lys Asn
    915   920   925

Lys Asp Glu Met Val Pro Ala Ala Met Val Ser Leu Leu Leu Thr Thr
    930   935   940

Pro Asp Ser Thr Arg Gly Ser Ile Cys Ile Ser Asp Gln Cys Asn Ser
945   950   955   960

Ala Asn Phe Ser Gly Ala Gln Ser Thr Gln Gly Thr Cys Glu Asp Glu
            965   970   975

Cys Gln Ser Gln Pro Ser Val Lys Tyr Ala Thr Leu Val Ser Asn Val
            980   985   990

16

```
Lys Thr Val Glu Thr Asp Glu Glu  Gln Gly Ala Ile His  Ser Ser Val
        995                 1000                  1005


Ser Gln  Cys Ile Ala Arg Lys  His Ser Pro Leu Arg  Gln Ser Phe
    1010                 1015                 1020


Ser Ser  Asn Ser Trp Glu Ile  Glu Ala Gln Ala Phe  Phe Leu Leu
    1025                 1030                 1035


Ser Asp  His Pro Pro Asn Val  Ile Ser Pro Gln Leu  Ser Phe Ser
    1040                 1045                 1050


Gly Leu  Asp Glu Leu Leu Glu  Leu Glu Gly Asn Phe  Pro Glu Glu
    1055                 1060                 1065


Asn His  Gly Glu Lys Ser Val  Tyr Tyr Leu Gly Val  Ser Ser Gly
    1070                 1075                 1080


Asn Lys  Arg Glu Asn Asp Met  Leu Leu Thr Asp Glu  Ala Gly Val
    1085                 1090                 1095


Leu Cys  Pro Phe Pro Ala His  Cys Leu Phe Ser Asp  Ile Arg Ile
    1100                 1105                 1110


Leu Gln  Glu Ser Cys Ser His  Phe Val Glu Asn Asn  Leu Asn Leu
    1115                 1120                 1125


Gly Thr  Ser Gly Lys Asn Phe  Val Pro Tyr Met Pro  Gln Phe Gln
    1130                 1135                 1140


Ser Cys  Ser Thr His Ser His  Lys Ile Ile Glu Asn  Lys Met Cys
    1145                 1150                 1155


Asp Leu  Thr Val
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17

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agtacaactg atgactcctt tctctctcct gctggagtcc caaacaatac ttcgtctttg   180

aaggggcctt ctgaagcact tgttgaagct aaatttaatt caactggcat ctacgtttct   240

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gcactcacag gcaacactga agggaagacg ctggcttcag tggtgaagcc tttagttttc   360

cgccaactag gtgtaaactg ggacatagag tgctggatga aaggggactt gacattattc   420

atctgtcata tggaaccatt acttaagaac cccttcaaga attatgactc taaggttcac   480

cttttatatg atctgcctga agttatagat gatttgcctc tgcccccact gaaagacagc   540

tttcagactg tccagtgcaa ctgcagtgtt cgggaatgcg aatgtcatgt accagtaccc   600

agagccaaag tcaactacgc tcttctgatg tatttagaaa tcacatctgc tggtgtgagt   660

tttcagtcac ctctaatgtc actgcagccc atgcttgttg tgaagcccga tccaccgctg   720

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gaggctgctg aaatcgtctc ggatacatct ctgctggtag acagcgtgct tcctgggtct   900

tcatacgagg tccaggtgag gagcaagaga ctggatggct caggagtctg gagtgactgg   960

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agtgttggat ccaatgcttc cttttgctgc atctacaaaa atgagaacca gactatctcc  1080

tcaaaacaaa tagtttggtg gatgaatcta gccgagaaga tccccgagac acagtacaac  1140

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gtaaaagcag agattactat aaacactgga ttattgaaag tatcttggga aaagccagtc  1680

tttccagaga ataaccttca gttccagatt cgatatggct aaatggaaa agaaatacaa  1740

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18

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tcccttgtga attttaacct tacgttctca tggcccatga gtaaagtgaa tgctgtgcag   2220

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cctatcgaga aatatcagtt tagtctttac ccagtattta tggaaggagt tggaaaacca   2460

aagataatta atggtttcac caaagatgat atcgccaaac agcaaaatga tgcagggctg   2520

tatgtcattg taccgataat tatttcctct tgtgtcctgc tgctcggaac actgttaatt   2580

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tgggcacaag gacttaattt ccaaaagcct gaaacatttg agcatctttt taccaagcat   2700

gcagaatcag tgatatttgg tcctcttctt ctggagcctg aaccagtttc agaagaaatc   2760

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ccctcagtta aatatgcaac gctggtcagc aacgtgaaaa cagtggaaac tgatgaagag   3000

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cagtcttttt ctagcaactc ctgggagata gaggcccagg catttttcct tttatcagat   3120

catccaccca atgtgatttc accacaactt tcattctcag ggttggatga gcttttggaa   3180

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ccattcccag ctcactgtct gttcagtgac atcagaatcc tccaggagag ttgttcacac   3360

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19

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Tyr Val Ile Thr Ala Leu Asn Leu Ala Tyr Pro Thr Ser Pro Trp Arg
                20   25   30

Phe Lys Leu Phe Cys Ala Pro Pro Ser Thr Thr Asp Asp Ser Phe Leu
            35   40   45

Ser Pro Ala Gly Val Pro Asn Asn Thr Ser Ser Leu Lys Gly Ala Ser
        50   55   60

Glu Ala Leu Val Glu Ala Lys Phe Asn Ser Thr Gly Ile Tyr Val Ser
65   70   75   80

Glu Leu Ser Lys Thr Ile Phe His Cys Cys Phe Gly Asn Glu Gln Gly
                85   90   95

Gln Asn Cys Ser Ala Leu Thr Gly Asn Thr Glu Gly Lys Thr Leu Ala
            100   105   110

Ser Val Val Lys Pro Leu Val Phe Arg Gln Leu Gly Val Asn Trp Asp
            115   120   125

Ile Glu Cys Trp Met Lys Gly Asp Leu Thr Leu Phe Ile Cys His Met
        130   135   140

Glu Pro Leu Leu Lys Asn Pro Phe Lys Asn Tyr Asp Ser Lys Val His
145   150   155   160

Leu Leu Tyr Asp Leu Pro Glu Val Ile Asp Asp Leu Pro Leu Pro Pro
                165   170   175

Leu Lys Asp Ser Phe Gln Thr Val Gln Cys Asn Cys Ser Val Arg Glu
                180   185   190

20

```
Cys Glu Cys His Val Pro Val Pro Arg Ala Lys Val Asn Tyr Ala Leu
        195             200             205

Leu Met Tyr Leu Glu Ile Thr Ser Ala Gly Val Ser Phe Gln Ser Pro
    210             215             220

Leu Met Ser Leu Gln Pro Met Leu Val Val Lys Pro Asp Pro Pro Leu
225             230             235             240

Gly Leu Arg Met Glu Val Thr Asp Asp Gly Asn Leu Lys Ile Ser Trp
            245             250             255

Asp Ser Gln Thr Lys Ala Pro Phe Pro Leu Gln Tyr Gln Val Lys Tyr
            260             265             270

Leu Glu Asn Ser Thr Ile Val Arg Glu Ala Ala Glu Ile Val Ser Asp
        275             280             285

Thr Ser Leu Leu Val Asp Ser Val Leu Pro Gly Ser Ser Tyr Glu Val
    290             295             300

Gln Val Arg Ser Lys Arg Leu Asp Gly Ser Gly Val Trp Ser Asp Trp
305             310             315             320

Ser Leu Pro Gln Leu Phe Thr Thr Gln Asp Val Met Tyr Phe Pro Pro
            325             330             335

Lys Ile Leu Thr Ser Val Gly Ser Asn Ala Ser Phe Cys Cys Ile Tyr
            340             345             350

Lys Asn Glu Asn Gln Thr Ile Ser Ser Lys Gln Ile Val Trp Trp Met
        355             360             365

Asn Leu Ala Glu Lys Ile Pro Glu Thr Gln Tyr Asn Thr Val Ser Asp
    370             375             380

His Ile Ser Lys Val Thr Phe Ser Asn Leu Lys Ala Thr Arg Pro Arg
385             390             395             400

Gly Lys Phe Thr Tyr Asp Ala Val Tyr Cys Cys Asn Glu Gln Ala Cys
            405             410             415
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21

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His His Arg Tyr Ala Glu Leu Tyr Val Ile Asp Val Asn Ile Asn Ile
        420             425         430

Ser Cys Glu Thr Asp Gly Tyr Leu Thr Lys Met Thr Cys Arg Trp Ser
        435             440         445

Pro Ser Thr Ile Gln Ser Leu Val Gly Ser Thr Val Gln Leu Arg Tyr
    450             455         460

His Arg Arg Ser Leu Tyr Cys Pro Asp Asn Pro Ser Ile Arg Pro Thr
465             470         475             480

Ser Glu Leu Lys Asn Cys Val Leu Gln Thr Asp Gly Phe Tyr Glu Cys
            485         490             495

Val Phe Gln Pro Ile Phe Leu Leu Ser Gly Tyr Thr Met Trp Ile Arg
        500         505             510

Ile Asn His Ser Leu Gly Ser Leu Asp Ser Pro Pro Thr Cys Val Leu
        515         520             525

Pro Asp Ser Val Val Lys Pro Leu Pro Pro Ser Asn Val Lys Ala Glu
    530         535             540

Ile Thr Ile Asn Thr Gly Leu Leu Lys Val Ser Trp Glu Lys Pro Val
545             550         555                 560

Phe Pro Glu Asn Asn Leu Gln Phe Gln Ile Arg Tyr Gly Leu Asn Gly
            565             570             575

Lys Glu Ile Gln Trp Lys Thr His Glu Val Phe Asp Ala Lys Ser Lys
        580             585             590

Ser Ala Ser Leu Pro Val Ser Asp Leu Cys Ala Val Tyr Val Val Gln
        595             600             605

Val Arg Cys Arg Arg Leu Asp Gly Leu Gly Tyr Trp Ser Asn Trp Ser
    610             615             620

Ser Pro Ala Tyr Thr Leu Val Met Asp Val Lys Val Pro Met Arg Gly
625             630             635             640

Pro Glu Phe Trp Arg Ile Met Asp Gly Asp Ile Thr Lys Lys Glu Arg
```

22

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                  645                    650                      655

Asn Val Thr Leu Leu Trp Lys Pro Leu Met Lys Asn Asp Ser Leu Cys
            660               665               670

Ser Val Arg Arg Tyr Val Val Lys His Arg Thr Ala His Asn Gly Thr
            675               680               685

Trp Ser Gln Asp Val Gly Asn Gln Thr Asn Leu Thr Phe Leu Trp Ala
    690               695               700

Glu Ser Ala His Thr Val Thr Val Leu Ala Ile Asn Ser Ile Gly Ala
705               710               715                       720

Ser Leu Val Asn Phe Asn Leu Thr Phe Ser Trp Pro Met Ser Lys Val
            725               730               735

Asn Ala Val Gln Ser Leu Ser Ala Tyr Pro Leu Ser Ser Ser Cys Val
            740               745               750

Ile Leu Ser Trp Thr Leu Ser Pro Asn Asp Tyr Ser Leu Leu Tyr Leu
            755               760               765

Val Ile Glu Trp Lys Asn Leu Asn Asp Asp Asp Gly Met Lys Trp Leu
    770               775               780

Arg Ile Pro Ser Asn Val Asn Lys Tyr Tyr Ile His Asp Asn Phe Ile
785               790               795                       800

Pro Ile Glu Lys Tyr Gln Phe Ser Leu Tyr Pro Val Phe Met Glu Gly
            805               810               815

Val Gly Lys Pro Lys Ile Ile Asn Gly Phe Thr Lys Asp Asp Ile Ala
            820               825               830

Lys Gln Gln Asn Asp Ala Gly Leu Tyr Val Ile Val Pro Ile Ile Ile
            835               840               845

Ser Ser Cys Val Leu Leu Leu Gly Thr Leu Leu Ile Ser His Gln Arg
    850               855               860

Met Lys Lys Leu Phe Trp Asp Asp Val Pro Asn Pro Lys Asn Cys Ser
865               870               875                       880

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Trp Ala Gln Gly Leu Asn Phe Gln Lys Pro Glu Thr Phe Glu His Leu
            885                   890                   895


Phe Thr Lys His Ala Glu Ser Val Ile Phe Gly Pro Leu Leu Leu Glu
            900                   905                   910


Pro Glu Pro Val Ser Glu Glu Ile Ser Val Asp Thr Ala Trp Lys Asn
            915                   920                   925


Lys Asp Glu Met Val Pro Ala Ala Met Val Ser Leu Leu Leu Thr Thr
    930                   935                   940


Pro Asp Ser Thr Arg Gly Ser Ile Cys Ile Ser Asp Gln Cys Asn Ser
945                   950                   955                   960


Ala Asn Phe Ser Gly Ala Gln Ser Thr Gln Gly Thr Cys Glu Asp Glu
            965                   970                   975


Cys Gln Ser Gln Pro Ser Val Lys Tyr Ala Thr Leu Val Ser Asn Val
            980                   985                   990


Lys Thr Val Glu Thr Asp Glu Glu  Gln Gly Ala Ile His  Ser Ser Val
            995                   1000                  1005


Ser Gln  Cys Ile Ala Arg Lys  His Ser Pro Leu Arg  Gln Ser Phe
    1010                  1015                  1020


Ser Ser  Asn Ser Trp Glu Ile  Glu Ala Gln Ala Phe  Phe Leu Leu
    1025                  1030                  1035


Ser Asp  His Pro Pro Asn Val  Ile Ser Pro Gln Leu  Ser Phe Ser
    1040                  1045                  1050


Gly Leu  Asp Glu Leu Leu Glu  Leu Glu Gly Asn Phe  Pro Glu Glu
    1055                  1060                  1065


Asn His  Gly Glu Lys Ser Val  Tyr Tyr Leu Gly Val  Ser Ser Gly
    1070                  1075                  1080


Asn Lys  Arg Glu Asn Asp Met  Leu Leu Thr Asp Glu  Ala Gly Val
    1085                  1090                  1095
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24

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Leu Cys  Pro Phe Pro Ala His  Cys Leu Phe Ser Asp  Ile Arg Ile
    1100              1105              1110


Leu Gln  Glu Ser Cys Ser His  Phe Val Glu Asn Asn  Leu Asn Leu
    1115              1120              1125


Gly Thr  Ser Gly Lys Asn Phe  Val Pro Tyr Met Pro  Gln Phe Gln
    1130              1135              1140


Ser Cys  Ser Thr His Ser His  Lys Ile Ile Glu Asn  Lys Met Cys
    1145              1150              1155


Asp Leu  Thr Val
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ggggctattg gactgacttt tcttatgctg ggatgtgcct tagaggatta tgggtgtact     180

tctctgaagt aagatgattt gtcaaaaatt ctgtgtggtt ttgttacatt gggaatttat     240

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ttgcatgcca ccaaattcaa cctatgacta cttccttttg cctgctggac tctcaaagaa     360

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ccaaaaaggc agttttcaga tggttcactg caattgcagt gttcatgaat gttgtgaatg     780

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25

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cagtatactt cctgggtctt cgtatgaggt tcaggtgagg ggcaagagac tggatggccc    1140

aggaatctgg agtgactgga gtactcctcg tgtctttacc acacaagatg tcatatactt    1200

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cagtctccca gttccagact tgtgtgcagt ctatgctgtt caggtgcgct gtaagaggct    2040

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tcagagatat gtgataaacc atcatacttc ctgcaatgga acatggtcag aagatgtggg    2280

aaatcacacg aaattcactt tcctgtggac agagcaagca catactgtta cggttctggc    2340

catcaattca attggtgctt ctgttgcaaa ttttaattta accttttcat ggcctatgag    2400

caaagtaaat atcgtgcagt cactcagtgc ttatcctttaa aacagcagtt gtgtgattgt    2460

ttcctggata ctatcaccca gtgattacaa gctaatgtat tttattattg agtggaaaaa    2520

tcttaatgaa gatggtgaaa taaaatggct tagaatctct tcatctgtta agaagtatta    2580

tatccatgat cattttatcc ccattgagaa gtaccagttc agtctttacc caatatttat    2640
```

26

```
ggaaggagtg ggaaaaccaa agataattaa tagtttcact caagatgata ttgaaaaaca      2700

ccagagtgat gcaggtttat atgtaattgt gccagtaatt atttcctctt ccatcttatt      2760

gcttggaaca ttattaatat cacaccaaag aatgaaaaag ctattttggg aagatgttcc      2820

gaaccccaag aattgttcct gggcacaagg acttaatttt cagaagccag aaacgtttga      2880

gcatcttttt atcaagcata cagcatcagt gacatgtggt cctcttcttt tggagcctga      2940

aacaatttca gaagatatca gtgttgatac atcatggaaa aataaagatg agatgatgcc      3000

aacaactgtg gtctctctac tttcaacaac agatcttgaa aagggttctg tttgtattag      3060

tgaccagttc aacagtgtta acttctctga ggctgagggt actgaggtaa cctatgaggc      3120

cgaaagccag agacaaccct tgttaaata cgccacgctg atcagcaact ctaaaccaag      3180

tgaaactggt gaagaacaag ggcttataaa tagttcagtc accaagtgct ctctagcaa      3240

aaattctccg ttgaaggatt ctttctctaa tagctcatgg gagatagagg cccaggcatt      3300

tttttatatta tcagatcagc atcccaacat aatttcacca cacctcacat tctcagaagg      3360

attggatgaa ctttttgaaat tggagggaaa tttccctgaa gaaaataatg ataaaaagtc      3420

tatctattat ttaggggtca cctcaatcaa aaagagagag agtggtgtgc ttttgactga      3480

caagtcaagg gtatcgtgcc cattcccagc cccctgttta ttcacggaca tcagagttct      3540

ccaggacagt tgctcacact ttgtagaaaa taatatcaac ttaggaactt ctagtaagaa      3600

gactttttgca tcttacatgc ctcaattcca aacttgttct actcagactc ataagatcat      3660

ggaaaacaag atgtgtgacc taactgtgta atttcactga agaaaccttc agatttgtgt      3720

tataatgggt aatataaagt gtaatagatt atagttgtgg gtgggagaga gaaaagaaac      3780

cagagtccaa atttgaaaat                                                 3800


<210>  10
<211>  1165
<212>  PRT
<213>  Homo sapiens

<400>  10

Met Ile Cys Gln Lys Phe Cys Val Val Leu Leu His Trp Glu Phe Ile
1               5                   10                  15


Tyr Val Ile Thr Ala Phe Asn Leu Ser Tyr Pro Ile Thr Pro Trp Arg
            20                  25                  30
```

27

```
Phe Lys Leu Ser Cys Met Pro Pro Asn Ser Thr Tyr Asp Tyr Phe Leu
        35              40              45

Leu Pro Ala Gly Leu Ser Lys Asn Thr Ser Asn Ser Asn Gly His Tyr
        50              55              60

Glu Thr Ala Val Glu Pro Lys Phe Asn Ser Ser Gly Thr His Phe Ser
65              70              75              80

Asn Leu Ser Lys Thr Thr Phe His Cys Cys Phe Arg Ser Glu Gln Asp
            85              90              95

Arg Asn Cys Ser Leu Cys Ala Asp Asn Ile Glu Gly Lys Thr Phe Val
            100             105             110

Ser Thr Val Asn Ser Leu Val Phe Gln Gln Ile Asp Ala Asn Trp Asn
        115             120             125

Ile Gln Cys Trp Leu Lys Gly Asp Leu Lys Leu Phe Ile Cys Tyr Val
    130             135             140

Glu Ser Leu Phe Lys Asn Leu Phe Arg Asn Tyr Asn Tyr Lys Val His
145             150             155             160

Leu Leu Tyr Val Leu Pro Glu Val Leu Glu Asp Ser Pro Leu Val Pro
            165             170             175

Gln Lys Gly Ser Phe Gln Met Val His Cys Asn Cys Ser Val His Glu
            180             185             190

Cys Cys Glu Cys Leu Val Pro Val Pro Thr Ala Lys Leu Asn Asp Thr
        195             200             205

Leu Leu Met Cys Leu Lys Ile Thr Ser Gly Gly Val Ile Phe Gln Ser
    210             215             220

Pro Leu Met Ser Val Gln Pro Ile Asn Met Val Lys Pro Asp Pro Pro
225             230             235             240

Leu Gly Leu His Met Glu Ile Thr Asp Asp Gly Asn Leu Lys Ile Ser
            245             250             255

Trp Ser Ser Pro Pro Leu Val Pro Phe Pro Leu Gln Tyr Gln Val Lys
```

```
                 260                    265                    270

Tyr Ser Glu Asn Ser Thr Thr Val Ile Arg Glu Ala Asp Lys Ile Val
    275                 280                 285

Ser Ala Thr Ser Leu Leu Val Asp Ser Ile Leu Pro Gly Ser Ser Tyr
    290                 295                 300

Glu Val Gln Val Arg Gly Lys Arg Leu Asp Gly Pro Gly Ile Trp Ser
305                 310                 315                 320

Asp Trp Ser Thr Pro Arg Val Phe Thr Thr Gln Asp Val Ile Tyr Phe
                325                 330                 335

Pro Pro Lys Ile Leu Thr Ser Val Gly Ser Asn Val Ser Phe His Cys
            340                 345                 350

Ile Tyr Lys Lys Glu Asn Lys Ile Val Pro Ser Lys Glu Ile Val Trp
        355                 360                 365

Trp Met Asn Leu Ala Glu Lys Ile Pro Gln Ser Gln Tyr Asp Val Val
    370                 375                 380

Ser Asp His Val Ser Lys Val Thr Phe Phe Asn Leu Asn Glu Thr Lys
385                 390                 395                 400

Pro Arg Gly Lys Phe Thr Tyr Asp Ala Val Tyr Cys Cys Asn Glu His
                405                 410                 415

Glu Cys His His Arg Tyr Ala Glu Leu Tyr Val Ile Asp Val Asn Ile
            420                 425                 430

Asn Ile Ser Cys Glu Thr Asp Gly Tyr Leu Thr Lys Met Thr Cys Arg
        435                 440                 445

Trp Ser Thr Ser Thr Ile Gln Ser Leu Ala Glu Ser Thr Leu Gln Leu
    450                 455                 460

Arg Tyr His Arg Ser Ser Leu Tyr Cys Ser Asp Ile Pro Ser Ile His
465                 470                 475                 480

Pro Ile Ser Glu Pro Lys Asp Cys Tyr Leu Gln Ser Asp Gly Phe Tyr
                485                 490                 495
```

29

Glu Cys Ile Phe Gln Pro Ile Phe Leu Leu Ser Gly Tyr Thr Met Trp
        500   505   510

Ile Arg Ile Asn His Ser Leu Gly Ser Leu Asp Ser Pro Pro Thr Cys
        515   520   525

Val Leu Pro Asp Ser Val Val Lys Pro Leu Pro Pro Ser Ser Val Lys
        530   535   540

Ala Glu Ile Thr Ile Asn Ile Gly Leu Leu Lys Ile Ser Trp Glu Lys
545   550   555   560

Pro Val Phe Pro Glu Asn Asn Leu Gln Phe Gln Ile Arg Tyr Gly Leu
                565   570   575

Ser Gly Lys Glu Val Gln Trp Lys Met Tyr Glu Val Tyr Asp Ala Lys
            580   585   590

Ser Lys Ser Val Ser Leu Pro Val Pro Asp Leu Cys Ala Val Tyr Ala
        595   600   605

Val Gln Val Arg Cys Lys Arg Leu Asp Gly Leu Gly Tyr Trp Ser Asn
        610   615   620

Trp Ser Asn Pro Ala Tyr Thr Val Val Met Asp Ile Lys Val Pro Met
625   630   635   640

Arg Gly Pro Glu Phe Trp Arg Ile Ile Asn Gly Asp Thr Met Lys Lys
            645   650   655

Glu Lys Asn Val Thr Leu Leu Trp Lys Pro Leu Met Lys Asn Asp Ser
            660   665   670

Leu Cys Ser Val Gln Arg Tyr Val Ile Asn His His Thr Ser Cys Asn
        675   680   685

Gly Thr Trp Ser Glu Asp Val Gly Asn His Thr Lys Phe Thr Phe Leu
        690   695   700

Trp Thr Glu Gln Ala His Thr Val Thr Val Leu Ala Ile Asn Ser Ile
705   710   715   720

30

Gly Ala Ser Val Ala Asn Phe Asn Leu Thr Phe Ser Trp Pro Met Ser
            725   730   735

Lys Val Asn Ile Val Gln Ser Leu Ser Ala Tyr Pro Leu Asn Ser Ser
            740   745   750

Cys Val Ile Val Ser Trp Ile Leu Ser Pro Ser Asp Tyr Lys Leu Met
            755   760   765

Tyr Phe Ile Ile Glu Trp Lys Asn Leu Asn Glu Asp Gly Glu Ile Lys
    770   775   780

Trp Leu Arg Ile Ser Ser Ser Val Lys Lys Tyr Tyr Ile His Asp His
785   790   795   800

Phe Ile Pro Ile Glu Lys Tyr Gln Phe Ser Leu Tyr Pro Ile Phe Met
            805   810   815

Glu Gly Val Gly Lys Pro Lys Ile Ile Asn Ser Phe Thr Gln Asp Asp
            820   825   830

Ile Glu Lys His Gln Ser Asp Ala Gly Leu Tyr Val Ile Val Pro Val
            835   840   845

Ile Ile Ser Ser Ser Ile Leu Leu Leu Gly Thr Leu Leu Ile Ser His
    850   855   860

Gln Arg Met Lys Lys Leu Phe Trp Glu Asp Val Pro Asn Pro Lys Asn
865   870   875   880

Cys Ser Trp Ala Gln Gly Leu Asn Phe Gln Lys Pro Glu Thr Phe Glu
            885   890   895

His Leu Phe Ile Lys His Thr Ala Ser Val Thr Cys Gly Pro Leu Leu
            900   905   910

Leu Glu Pro Glu Thr Ile Ser Glu Asp Ile Ser Val Asp Thr Ser Trp
    915   920   925

Lys Asn Lys Asp Glu Met Met Pro Thr Thr Val Val Ser Leu Leu Ser
    930   935   940

31

```
Thr Thr Asp Leu Glu Lys Gly Ser Val Cys Ile Ser Asp Gln Phe Asn
945                 950             955                 960


Ser Val Asn Phe Ser Glu Ala Glu Gly Thr Glu Val Thr Tyr Glu Ala
              965                 970                 975


Glu Ser Gln Arg Gln Pro Phe Val Lys Tyr Ala Thr Leu Ile Ser Asn
              980                 985             990


Ser Lys Pro Ser Glu Thr Gly Glu  Glu Gln Gly Leu Ile  Asn Ser Ser
         995                 1000                1005


Val Thr  Lys Cys Phe Ser Ser  Lys Asn Ser Pro Leu  Lys Asp Ser
     1010                1015                1020


Phe Ser  Asn Ser Ser Trp Glu  Ile Glu Ala Gln Ala  Phe Phe Ile
     1025                1030                1035


Leu Ser  Asp Gln His Pro Asn  Ile Ile Ser Pro His  Leu Thr Phe
     1040                1045                1050


Ser Glu  Gly Leu Asp Glu Leu  Leu Lys Leu Glu Gly  Asn Phe Pro
     1055                1060                1065


Glu Glu  Asn Asn Asp Lys Lys  Ser Ile Tyr Tyr Leu  Gly Val Thr
     1070                1075                1080


Ser Ile  Lys Lys Arg Glu Ser  Gly Val Leu Leu Thr  Asp Lys Ser
     1085                1090                1095


Arg Val  Ser Cys Pro Phe Pro  Ala Pro Cys Leu Phe  Thr Asp Ile
     1100                1105                1110


Arg Val  Leu Gln Asp Ser Cys  Ser His Phe Val Glu  Asn Asn Ile
     1115                1120                1125


Asn Leu  Gly Thr Ser Ser Lys  Lys Thr Phe Ala Ser  Tyr Met Pro
     1130                1135                1140


Gln Phe  Gln Thr Cys Ser Thr  Gln Thr His Lys Ile  Met Glu Asn
     1145                1150                1155


Lys Met  Cys Asp Leu Thr Val
```

32

<210> 11
<211> 504
<212> DNA
<213> Sus scrofa

<400> 11
atgcgctgtg gacccctgtg ccgattcctg tggctttggc cctatctgtc ctacgttgaa   60

gccgtgccca tctggagagt ccaggatgac accaaaaccc tcatcaagac gattgtcacc   120

aggatcagtg acatttcaca catgcagtct gtctcctcca aacagagggt caccggtttg   180

gacttcatcc ctgggctcca tcctgtcctg agtttgtcca agatggacca gaccctggcg   240

atctaccaac agatcctcac cagtctgcct tccagaaatg tgatccaaat atcgaatgac   300

ctggagaacc tccgggacct tctccacctg ctggcctcct ccaagagctg ccccttgccc   360

caggccaggg ccctggagac cttggagagc ctgggcggcg tcctggaagc ctccctctac   420

tccacggagg tggtggccct gagcaggctg caggggggctc tgcaggacat gctgcggcag   480

ctggacctca gccctggctg ctga   504

<210> 12
<211> 167
<212> PRT
<213> Sus scrofa

<400> 12

Met Arg Cys Gly Pro Leu Cys Arg Phe Leu Trp Leu Trp Pro Tyr Leu
1   5   10   15

Ser Tyr Val Glu Ala Val Pro Ile Trp Arg Val Gln Asp Asp Thr Lys
            20   25   30

Thr Leu Ile Lys Thr Ile Val Thr Arg Ile Ser Asp Ile Ser His Met
            35   40   45

Gln Ser Val Ser Ser Lys Gln Arg Val Thr Gly Leu Asp Phe Ile Pro
    50   55   60

Gly Leu His Pro Val Leu Ser Leu Ser Lys Met Asp Gln Thr Leu Ala
65   70   75   80

Ile Tyr Gln Gln Ile Leu Thr Ser Leu Pro Ser Arg Asn Val Ile Gln
                85   90   95

```
Ile Ser Asn Asp Leu Glu Asn Leu Arg Asp Leu Leu His Leu Leu Ala
            100                 105             110


Ser Ser Lys Ser Cys Pro Leu Pro Gln Ala Arg Ala Leu Glu Thr Leu
            115                 120             125


Glu Ser Leu Gly Gly Val Leu Glu Ala Ser Leu Tyr Ser Thr Glu Val
    130             135             140


Val Ala Leu Ser Arg Leu Gln Gly Ala Leu Gln Asp Met Leu Arg Gln
145             150             155             160


Leu Asp Leu Ser Pro Gly Cys
                165



<210> 13
<211> 1413
<212> DNA
<213> Mus musculus

<220>
<221> misc_feature
<222> (1216)..(1216)
<223> "n" can be either "a", "c", "t", or "g"

<400> 13
cccgtgtgtt tgtgttcata gcatttgaag aactcaagcc tgggagtttt tcttgtctaa      60

ctttgaaaaa ctgagactgc ctctcccttg tgatttttga tattccaagt ttccagtcac     120

caactgtgtc atttggggtt gactgatgta ccttgctttg aaccttacac actgcctttc     180

tgcaaatgtg actgaatgaa gatgtaaata ctgagcatta aaatgtgtct tttcttttag     240

cctgaaacat ttgagcatct ttttaccaag catgcagaat cagtgatatt tggtcctctt     300

cttctggagc ctgaacccat ttcagaagaa atcagtgtcg atacagcttg gaaaaataaa     360

gatgagatgg tcccagcagc tatggtctcc cttcttttga ccacaccaga ccctgaaagc     420

agttctattt gtattagtga ccagtgtaac agtgctaact tctctgggtc tcagagcacc     480

caggtaacct gtgaggatga gtgtcagaga caaccctcag ttaaatatgc aactctggtc     540

agcaacgata aactagtgga aactgatgaa gagcaagggt ttatccatag tcctgtcagc     600

aactgcatct ccagtaatca ttccccactg aggcagtctt tctctagcag ctcctgggag     660

acagaggccc agacattttt cctttttatca gaccagcaac ccaccatgat ttcaccacaa     720
```

34

```
ctttcattct cggggttgga tgagcttttg gaactggagg gaagttttcc tgaagaaaat    780

cacagggaga agtctgtctg ttatctagga gtcacctccg tcaacagaag agagagtggt    840

gtgcttttga ctggtgaggc aggaatcctg tgcacattcc cagcccagtg tctgttcagt    900

gacatcagga tcctccagga gagatgctca cactttgtag aaaataattt gagtttaggg    960

acctctggtg agaactttgt accttacatg ccccaatttc aaacctgttc cacgcacagt   1020

cacaagataa tggagaataa gatgtgtgac ttaactgtgc aatctcatcc aaaaagcctc   1080

aaggttccgt tccagtagag tgtgtcatgt ataatgtgtt cttttattgt tgtggatgtg   1140

ggagacaagt gtcagaatct agtgtgaaaa tgattgtttc caaactaagt gtgtctattt   1200

tctctcagta atacanatga aacatatgag gaagccctca ttaatctagt aatgtagatg   1260

gactcttact gaatatattc ccaagatact tggggaagtc tccctaattc tagctaaaaa   1320

taaacccagg aagtagaatc tataaactct gaactctgtg gaaagaagaa atttcaacac   1380

gatattgaca gctgaacaaa aaggtttcaa gct                                 1413


<210>   14
<211>   1174
<212>   PRT
<213>   Mus musculus

<400>   14

Met Met Cys Gln Lys Phe Tyr Val Val Leu Leu His Trp Glu Phe Leu
1               5                   10                  15


Tyr Val Ile Ala Ala Leu Asn Leu Ala Tyr Pro Ile Ser Pro Trp Lys
            20                  25                  30


Phe Lys Leu Phe Cys Gly Pro Pro Asn Thr Thr Asp Asp Ser Phe Leu
        35                  40                  45


Ser Pro Ala Gly Ala Pro Asn Asn Ala Ser Ala Leu Lys Gly Ala Ser
    50                  55                  60


Glu Ala Ile Val Glu Ala Lys Phe Asn Ser Ser Gly Ile Tyr Val Pro
65                  70                  75                  80


Glu Leu Ser Lys Thr Val Phe His Cys Cys Phe Gly Asn Glu Gln Gly
                85                  90                  95


Gln Asn Cys Ser Ala Leu Thr Asp Asn Thr Glu Gly Lys Thr Leu Ala
```

```
                100                      105                      110


        Ser Val Val Lys Ala Ser Val Phe Arg Gln Leu Gly Val Asn Trp Asp
                115                      120             125


        Ile Glu Cys Trp Met Lys Gly Asp Leu Thr Leu Phe Ile Cys His Met
            130                  135                  140


        Glu Pro Leu Pro Lys Asn Pro Phe Lys Asn Tyr Asp Ser Lys Val His
        145                  150                  155                  160


        Leu Leu Tyr Asp Leu Pro Glu Val Ile Asp Asp Ser Pro Leu Pro Pro
                        165                  170                  175


        Leu Lys Asp Ser Phe Gln Thr Val Gln Cys Asn Cys Ser Leu Arg Gly
                    180                  185                  190


        Cys Glu Cys His Val Pro Val Pro Arg Ala Lys Leu Asn Tyr Ala Leu
                195                  200                  205


        Leu Met Tyr Leu Glu Ile Thr Ser Ala Gly Val Ser Phe Gln Ser Pro
                210                  215                  220


        Leu Met Ser Leu Gln Pro Met Leu Val Val Lys Pro Asp Pro Pro Leu
        225                  230                  235                  240


        Gly Leu His Met Glu Val Thr Asp Asp Gly Asn Leu Lys Ile Ser Trp
                        245                  250                  255


        Asp Ser Gln Thr Met Ala Pro Phe Pro Leu Gln Tyr Gln Val Lys Tyr
                    260                  265                  270


        Leu Glu Asn Ser Thr Ile Val Arg Glu Ala Ala Glu Ile Val Ser Ala
                275                  280                  285


        Thr Ser Leu Leu Val Asp Ser Val Leu Pro Gly Ser Ser Tyr Glu Val
                290                  295                  300


        Gln Val Arg Ser Lys Arg Leu Asp Gly Ser Gly Val Trp Ser Asp Trp
        305                  310                  315                  320


        Ser Ser Pro Gln Val Phe Thr Thr Gln Asp Val Val Tyr Phe Pro Pro
                    325                  330                  335


                                      36
```

```
Lys Ile Leu Thr Ser Val Gly Ser Asn Ala Ser Phe His Cys Ile Tyr
        340             345             350

Lys Asn Glu Asn Gln Ile Ile Ser Ser Lys Gln Ile Val Trp Trp Arg
        355             360             365

Asn Leu Ala Glu Lys Ile Pro Glu Ile Gln Tyr Ser Ile Val Ser Asp
    370             375             380

Arg Val Ser Lys Val Thr Phe Ser Asn Leu Lys Ala Thr Arg Pro Arg
385             390             395             400

Gly Lys Phe Thr Tyr Asp Ala Val Tyr Cys Cys Asn Glu Gln Ala Cys
            405             410             415

His His Arg Tyr Ala Glu Leu Tyr Val Ile Asp Val Asn Ile Asn Ile
            420             425             430

Ser Cys Glu Thr Asp Gly Tyr Leu Thr Lys Met Thr Cys Arg Trp Ser
        435             440             445

Pro Ser Thr Ile Gln Ser Leu Val Gly Ser Thr Val Gln Leu Arg Tyr
    450             455             460

His Arg Arg Ser Leu Tyr Cys Pro Asp Ser Pro Ser Ile His Pro Thr
465             470             475             480

Ser Glu Pro Lys Asn Cys Val Leu Gln Arg Asp Gly Phe Tyr Glu Cys
            485             490             495

Val Phe Gln Pro Ile Phe Leu Leu Ser Gly Tyr Thr Met Trp Ile Arg
            500             505             510

Ile Asn His Ser Leu Gly Ser Leu Asp Ser Pro Pro Thr Cys Val Leu
        515             520             525

Pro Asp Ser Val Val Lys Pro Leu Pro Pro Ser Asn Val Lys Ala Glu
    530             535             540

Ile Thr Val Asn Thr Gly Leu Leu Lys Val Ser Trp Glu Lys Pro Val
545             550             555             560
```

37

```
Phe Pro Glu Asn Asn Leu Gln Phe Gln Ile Arg Tyr Gly Leu Ser Gly
            565                     570                 575


Lys Glu Ile Gln Trp Lys Thr His Glu Val Phe Asp Ala Lys Ser Lys
            580                     585                 590


Ser Ala Ser Leu Leu Val Ser Asp Leu Cys Ala Val Tyr Val Val Gln
            595                 600                 605


Val Arg Cys Arg Arg Leu Asp Gly Leu Gly Tyr Trp Ser Asn Trp Ser
    610                 615                 620


Ser Pro Ala Tyr Thr Leu Val Met Asp Val Lys Val Pro Met Arg Gly
625                 630                 635                     640


Pro Glu Phe Trp Arg Lys Met Asp Gly Asp Val Thr Lys Lys Glu Arg
            645                     650                 655


Asn Val Thr Leu Leu Trp Lys Pro Leu Thr Lys Asn Asp Ser Leu Cys
            660                 665                 670


Ser Val Arg Arg Tyr Val Val Lys His Arg Thr Ala His Asn Gly Thr
            675                 680                 685


Trp Ser Glu Asp Val Gly Asn Arg Thr Asn Leu Thr Phe Leu Trp Thr
    690                 695                 700


Glu Pro Ala His Thr Val Thr Val Leu Ala Val Asn Ser Leu Gly Ala
705                 710                 715                     720


Ser Leu Val Asn Phe Asn Leu Thr Phe Ser Trp Pro Met Ser Lys Val
            725                 730                 735


Ser Ala Val Glu Ser Leu Ser Ala Tyr Pro Leu Ser Ser Ser Cys Val
            740                 745                 750


Ile Leu Ser Trp Thr Leu Ser Pro Asp Asp Tyr Ser Leu Leu Tyr Leu
            755                 760                 765


Val Ile Glu Trp Lys Ile Leu Asn Glu Asp Asp Gly Met Lys Trp Leu
    770                 775                 780
```

38

```
Arg Ile Pro Ser Asn Val Lys Lys Phe Tyr Ile His Asp Asn Phe Ile
785             790             795             800


Pro Ile Glu Lys Tyr Gln Phe Ser Leu Tyr Pro Val Phe Met Glu Gly
            805             810             815


Val Gly Lys Pro Lys Ile Ile Asn Gly Phe Thr Lys Asp Ala Ile Asp
            820             825             830


Lys Gln Gln Asn Asp Ala Gly Leu Tyr Val Ile Val Pro Ile Ile Ile
            835             840             845


Ser Ser Cys Val Leu Leu Leu Gly Thr Leu Leu Ile Ser His Gln Arg
    850             855             860


Met Lys Lys Leu Phe Trp Asp Asp Val Pro Asn Pro Lys Asn Cys Ser
865             870             875             880


Trp Ala Gln Gly Leu Asn Phe Gln Lys Pro Glu Thr Phe Glu His Leu
            885             890             895


Phe Thr Lys His Ala Glu Ser Val Ile Phe Gly Pro Leu Leu Leu Glu
            900             905             910


Pro Glu Pro Ile Ser Glu Glu Ile Ser Val Asp Thr Ala Trp Lys Asn
    915             920             925


Lys Asp Glu Met Val Pro Ala Ala Met Val Ser Leu Leu Leu Thr Thr
    930             935             940


Pro Asp Pro Glu Ser Ser Ser Ile Cys Ile Ser Asp Gln Cys Asn Ser
945             950             955             960


Ala Asn Phe Ser Gly Ser Gln Ser Thr Gln Val Thr Cys Glu Asp Glu
            965             970             975


Cys Gln Arg Gln Pro Ser Val Lys Tyr Ala Thr Leu Val Ser Asn Asp
            980             985             990


Lys Leu Val Glu Thr Asp Glu Glu  Gln Gly Phe Ile His  Ser Pro Val
    995             1000            1005


Ser Asn  Cys Ile Ser Ser Asn  His Ser Pro Leu Arg  Gln Ser Phe
```

Ser Ser Ser Ser Trp Glu Thr Glu Ala Gln Thr Phe Phe Leu Leu
    1025   1030   1035

Ser Asp Gln Gln Pro Thr Met Ile Ser Pro Gln Leu Ser Phe Ser
    1040   1045   1050

Gly Leu Asp Glu Leu Leu Glu Leu Glu Gly Ser Phe Pro Glu Glu
    1055   1060   1065

Asn His Arg Glu Lys Ser Val Cys Tyr Leu Gly Val Thr Ser Val
    1070   1075   1080

Asn Arg Arg Glu Ser Gly Val Leu Leu Thr Gly Glu Ala Gly Ile
    1085   1090   1095

Leu Cys Thr Phe Pro Ala Gln Cys Leu Phe Ser Asp Ile Arg Ile
    1100   1105   1110

Leu Gln Glu Arg Cys Ser His Phe Val Glu Asn Asn Leu Ser Leu
    1115   1120   1125

Gly Thr Ser Gly Glu Asn Phe Val Pro Tyr Met Pro Gln Phe Gln
    1130   1135   1140

Thr Cys Ser Thr His Ser His Lys Ile Met Glu Asn Lys Met Cys
    1145   1150   1155

Asp Leu Thr Val Gln Ser His Pro Lys Ser Leu Lys Val Pro Phe
    1160   1165   1170

Gln

<210> 15
<211> 4067
<212> DNA
<213> Bos taurus

<400> 15
gaattcacgg ttccatgact ttggagtttc agacatcctg agtgaacacg gtaggctgag   60

agtgtatgtg ctctctctgg ccttcaggtc tttgtaccag ctgctctctt ggccacttat   120

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ggcaaccact tgtattcttc caagacctcc ccttcgcctt caatacccag ctcaggcgac      180

acctcttctc agggaggcca ctttgtaatc ctgcaatatc ttgtccttct tgcagagctc      240

tttcttaaaa aaaaaaaaaa aatatatata tatatatata taatttattt ttaattgaag      300

ggtaattgct ttacaatatt gtgttggttt cagccatact tgcagagctc tttcctcctg      360

tactgctacg gcctgtttac tatctcccct attaaactgg aaacactttg agagtaaaaa      420

aacatccgtt gttcactgtg gcatccttgg tgcccagcac tgcgtctgat tatcagacct      480

tctgtaagtg cccgtcggag tcaggctccc aatgggagag aaaggaagca ataaagccag      540

tggtaaatgc catcacggag gtatcagtgc ctgctgtga gagagtaatg aagaggacag      600

tcacataaac tctaataata gggtagtaat agagaacctt tcacaactcc tttaaagctc      660

tttcacgcac attatctaat ttgatcctca taaaaccctg gagataggta cattgtgggg      720

gatacagggg gagtttttag cggttatggg atatgcctgc agtcgtacag ctattaaatg      780

tctggattca aaccagacct tgaaagcccg ccgtccaccc gctcgtgccc tggctcactg      840

ctgcgtggtc tacagcacac ctcctgtggt tttcttgatt ccgccgcacc tctccccagg      900

gagtgccttt cattactgtc atttctagac aatgaattgt ctttgaggag atgatagcca      960

tggcagacag caaatctcgt tgttatccgc atctgaagac gtggatgcgg gtggtaacgg     1020

agcacgtggg tgttctcgga gatcgacgat gtgccacgtg tggtttcttc tgttttcagg     1080

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41

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42

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<213>  Bos taurus

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Ser Tyr Val Glu Ala Val Pro Ile Arg Lys Val Gln Asp Asp Thr Lys
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Thr Leu Ile Lys Thr Ile Val Thr Arg Ile Asn Asp Ile Ser His Thr
        35                  40                  45


Gln Ser Val Ser Ser Lys Gln Arg Val Thr Gly Leu Asp Phe Ile Pro
    50                  55                  60


Gly Leu His Pro Leu Leu Ser Leu Ser Lys Met Asp Gln Thr Leu Ala
65                  70                  75                  80


Ile Tyr Gln Gln Ile Leu Thr Ser Leu Pro Ser Arg Asn Val Val Gln
                85                  90                  95


Ile Ser Asn Asp Leu Glu Asn Leu Arg Asp Leu Leu His Leu Leu Ala
            100                 105                 110


Ala Ser Lys Ser Cys Pro Leu Pro Gln Val Arg Ala Leu Glu Ser Leu
        115                 120                 125
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43

Glu Ser Leu Gly Val Val Leu Glu Ala Ser Leu Tyr Ser Thr Glu Val
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Val Ala Leu Ser Arg Leu Gln Gly Ser Leu Gln Asp Met Leu Arg Gln
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Leu Asp Leu Ser Pro Gly Cys
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<212> PRT
<213> Homo sapiens

<400> 17

Cys Ser Thr Gln Thr His Lys Ile Met Glu Asn Lys Met Cys Asp Leu
1   5   10   15

Thr Val

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<400> 18

Lys Leu Glu Gly Asn Phe Pro Glu Glu Asn Asn Asp Lys Lys Ser Ile
1   5   10   15

Tyr

<210> 19
<211> 17
<212> PRT
<213> Homo sapiens

<400> 19

Ile Thr Asp Asp Gly Asn Leu Lys Ile Ser Trp Ser Ser Pro Pro Leu
1   5   10   15

Val

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<213>  Homo sapiens

<400>  20

Cys Ser Asp Ile Pro Ser Ile His Pro Ile Ser Glu Pro Lys Asp
1                   5                   10                  15


<210>  21
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<213>  Homo sapiens

<400>  21

Cys Val Ile Val Ser Trp Ile Leu Ser Pro Ser Asp Tyr Lys Leu
1                   5                   10                  15
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